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| 10/591,718 | 09/05/2006 | Keita Ishiduka | 1608-7 PCT/US | 3280 |
| 23869 7590 07/10/2009 HOFFMANN & BARON, LLP 6900 JERICHO TURNPIKE SYOSSET, NY 11791 | | | | |
| EXAMINER | | | | |
| JOHNSON, CONNIE P | | | | |
| ART UNIT | | PAPER NUMBER | | |
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| 07/10/2009 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/591,718

Applicant(s)

ISHIDUKA ET AL.

Examiner

CONNIE P. JOHNSON

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2009.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-24 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1,2 and 4-24 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/5508)
Paper No(s)/Mail Date 3/19/09
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/7/2009 has been entered.

Response to Amendment

2. The remarks and amendment filed 5/7/2009 has been entered and fully considered.
3. Claims 1-2 and 4-24 are presented.
4. Claim 1 is amended.
5. Claim 3 is cancelled per applicants' request.
6. Claims 14-24 are new.

Claim Objections

7. Claims 9 and 20 are objected to because of the following informalities: In claims 9 and 20, the term "norbolnyl" should read "norbornyl." Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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9. Claims 5 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Claims 5 and 16 recites the limitation "wherein the unit (a3) is the constitutional unit (a4)" in line 2. There is insufficient antecedent basis for this limitation in the claim.

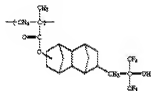
Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-2, 4-12 and 15-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanna et al., U.S. Patent Publication No. 2004/0009430 A1.

Kanna teaches a positive resist composition comprising a resin with a recurring group that decomposes by action of an acid to become soluble in alkali developer (page 2, [0018]). The recurring unit comprises divalent and trivalent cyclic groups (a1) (page 21). Examples of the (a1) groups are shown below:

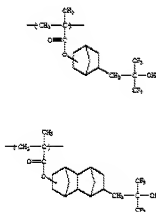


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Recurring units that meet the limitations of (a2) are on page 36 of the reference:



Recurring unit (a3) comprises the following unit on page 37:



The positive resist composition also comprises a photoacid generator (page 49, [0342]). The recurring units (a1) and (a2) are each present in an amount of 5 to 80mol% (page 12, [0165-0166]) (instant claim 1). The combination of recurring units (a1), (a2) and (a3) is not exemplified in the reference. However, it would have been obvious to one of ordinary skill in the art to combine the recurring units because Kanna teaches recurring units combined in any combination as shown increases solubility of the resin in an alkali developer, has less line edge roughness and less development time (page 1, [0013]).

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13. Claims 13, 14 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanna et al., U.S. Patent Publication No. 2004/0009430 A1 (above) in view of Endo et al., U.S. Patent Publication No. 2004/0259040 A1.

Kanna teaches a positive resist composition comprising a resin with a recurring group that decomposes by action of an acid to become soluble in alkali developer as relied upon above (page 2, [0018]). Kanna teaches a method of forming a positive resist composition. However, Kanna does not teach a method of immersion exposure.

Endo teaches an immersion exposure method comprising supplying water as the immersion liquid onto a resist film, exposing through the immersion liquid, baking and developing the resist film (page 58, [0058-0059]). It would have been obvious to one of ordinary skill in the art to use immersion exposure in the composition of Kanna because immersion exposure is well known to improve resolution and refine patterns at conventional exposure wavelengths (page 1, [0003-0004]).

Response to Arguments

14. Applicant's arguments filed 5/7/2009, with respect to the rejection(s) of claim(s) 1-11 under 103(a) and claims 1, 12 and 13 under 103(a) have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made herein. However, Kanna is still included in the rejection.

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15. Applicant argues that Kanna does not teach the limitation of claim 1 wherein the methacrylic ester and acrylic ester are present in amounts of 20 to 80mol% in a composition for immersion exposure.

Applicant does not claim an immersion exposure method in claim 1. The recitation, "A positive-type resist composition for liquid immersion lithography" is intended use and therefore does not add patentable weight to the claim. Applicant is reminded of MPEP 2106 with regards to intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

In addition, Kanna teaches the methacrylic ester and acrylic ester recurring units in amounts of 5 to 80mol% as claimed (page 12, [0165-0166]).

16. Applicant argues that Kanna does not teach immersion lithography as the exposure method.

In the new 103(a) rejection, Endo is used to show that immersion lithography is conventionally used to expose positive resist compositions to improve resolution and refine patterns.

17. Applicant argues that Kanna teaches repeating units in a broad range and that it would not have been easy to select from among the broad range a combination of repeating units for constituting a resin suitable for a resist composition for immersion lithography.

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Kanna teaches a finite group of repeating unit structures representing (a1), (a2) and (a3) that are comprised in the resist composition. It would have been obvious to choose the repeating units as claimed because Kanna teaches any of the groups from (a1), (a2) and (a3) would combine to form a polymer that is capable of enhancing performance properties of the resist composition, absent any evidence to the contrary (page 12, [0164-0166]). In addition, Kanna teaches the specific amounts as claimed, 5 to 80mol% of the recurring units. Although Kanna may not teach an immersion exposure procedure, one of ordinary skill would have been directed to use immersion exposure to improve pattern formation and resolution.

18. Applicant argues that although Kanna teaches methacrylic ester and acrylic esters as recurring units in the resist composition, Kanna does not teach using both units in a specific amount or the effects of using the specific amounts thereof.

Kanna teaches the methacrylic esters and acrylic esters in specific amounts as claimed, 5 to 80mol% of the recurring units in the resist. The repeating units of the polymer taught by Kanna meet the limitations of the resin component of the resist composition. Although Kanna may not point to the same benefits of the repeating units in the polymer, Kanna teaches performance improvements of the resist based on the repeating units in the resist polymer (page 12, [0164-0166]). The fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for

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patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

The 103(a) rejection over Kanna et al. in view of Kawashima et al. has been withdrawn. Therefore, the arguments over Kawashima are moot.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CONNIE P. JOHNSON whose telephone number is (571)272-7758. The examiner can normally be reached on 7:30am-4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Connie P. Johnson/
Examiner, Art Unit 1795

/Cynthia H Kelly/

Supervisory Patent Examiner, Art Unit 1795